VOLUME CONTENTS

No. 1, January 1989

OBITUARY

Hope Elizabeth Hopps 1

LETTER TO THE EDITOR

Large-Scale Preparation of an Inhibitory Factor Secreted by Mouse 3T3 Cells on Microcarriers
G. Chatelain, C. Blat, and L. Harel 3

MEETING REPORT

Human Fetal Tissue Transplantation Research Panel
David W. Barnes and Robert E. Stevenson 6

REGULAR PAPERS

Automated Selective Dissociation of Cells from Different Regions of Multicellular Spheroids
James P. Freyer and Patricia L. Schor 9

A Simplified Technique for the Short-Term Tissue Culture of Rabbit Corneal Cells
Lixin Xie and Bryan M. Gebhardt 20

Characterization of Human Mammary Cell Types in Primary Culture: Immunofluorescent and Immunocytochemical Indicators of Cellular Heterogeneity
Philip S. Rudland, Christine M. Hughes, Sharon A. Ferns, and Michael J. Warburton. 23

Establishment of Human Osteoblastic Cells Derived from Periosteum in Culture
Yasuko Koshihara, Mieko Kawamura, Sachiko Endo, Chiharu Tsutsumi, Hiroaki Kodama, Hiromi Oda, and Shohzo Higaki 37

A Continuous Alveolar Macrophage Cell Line: Comparisons with Freshly Derived Alveolar Macrophages
Ronald J. Helmke, Victor F. German, and John A. Mangos 44

Ability of Mammalian Fibroblasts to Grow in Synthetic Medium Containing Neither Serum Nor Exogenously Added Macromolecules
Miroslav Hill, Jana Hillova, Régine Mariage-Samson, Brigitte Fasciotto, and Velibor Krsmánovic 49

Biocompatibility Testing of an Experimental Fluoride Releasing Resin Using Human Gingival Epithelial Cells In Vitro
Frederick H. Kasten, L. Fatima R. Pineda, Paul E. Schneider, H. Ralph Rawls, and Theda A. Foster 57

A Method for Infection of Cultured Myogenic Cells with Rous Sarcoma Virus Using Polybrene
L. M. Sorokin, E. H. Morgan, G. C. T. Yeoh, and R. Coelen 63

Power Analysis of Statistical Methods for Comparing Treatment Differences from Limiting Dilution Assays
Marcia K. Schmehl, Loren Cobb, and Harvey L. Bank 69

Comparison of Statistical Methods for the Analysis of Limiting Dilution Assays
Loren Cobb, Louis Cyr, Marcia K. Schmehl, and Harvey L. Bank 76

Morphologic Changes Induced In Vitro by 2,5 Hexanedione
Walter Malorni, Giuseppe Formisano, and Gianfranco Donelli 82

PLANT CELLULAR AND DEVELOPMENTAL BIOLOGY

Genetic Analysis of Plant Regeneration in Rice (*Oryza Sativa L.*)
Jianying Peng and Thomas K. Hodges 91

Inheritance of Somatic Embryogenesis and Plantlet Regeneration from Primary (Type 1) Callus in Maize
M. R. Willman, S. M. Schroll, and T. K. Hodges 95

RAPID COMMUNICATIONS IN CELL BIOLOGY

Transforming Growth Factor-β Inhibits Cellular Adenylate Cyclase Activity in Cultured Human Arterial Endothelial Cells
Hiroyuki Mioh and Jan-Kan Chen 101

A Rapid Micro Method for Counting Cells "In Situ" Using a Fluorogenic Alkaline Phosphatase Enzyme Assay
Lily I. Huschtscha, Frances C. Lucibello, and Walter F. Bodmer 105

No. 2, February 1989

LETTER TO THE EDITOR

Cobblestone Monolayer Cells From Human Omental Adipose Tissue are Possibly Mesothelial, Not Endothelial
K. Takahashi, T. Goto, K. Mukai, Y. Sawasaki, and J. Hata 109

BRIEF NOTE

Regulation of Insulin Synthesis in an Insulin-Producing Cell Line (RINm5F): Long-Term Experiments
Adrian S. Dobs, Christiane Broussolle, and M. Daniel Lane. 112

INVITED REVIEW

Hepatic Acute Phase Reaction In Vivo and In Vitro
Heinz Baumann 115

REGULAR PAPERS

Rat Pituitary Tumor Cells in Serum-Free Culture. I. Selection of Thyroid Hormone-Responsive and Autonomous Cells
Terry L. Riss, Betty H. Stewart, and David A. Sirbasku 127

Rat Pituitary Tumor Cells in Serum-Free Culture. II. Serum Factor and Thyroid Hormone Requirements for Estrogen-Responsive Growth
Terry L. Riss and David A. Sirbasku. 136

Use of Commercial Serum Replacements for the Culture of Insect Cells
J. L. Vaughn and F. Fan 143

Enhancement of Pancreatic Islet Cell Monolayer Growth by Endothelial Cell Matrix and Insulin
Alberto Hayek, Ana D. Lopez, and Gillian M. Beattie. 146

Growth of Rat Mammary Tumor Line 64-24 in Liposome-Supplemented Defined Medium. I. Effect of Liposome B Components on Colony Growth
Brigitte A. Van Der Haegen, Richard G. Ham, and Tamiko Kano-Sueoka 151

Growth of Rat Mammary Tumor Line 64-24 in Liposome-Supplemented Defined Medium. II. Effect of Liposome B and Prolactin on Colony Forming Efficiency
Brigitte A. Van Der Haegen, Richard G. Ham, and Tamiko Kano-Sueoka 158

Smooth Muscle Releases an Epithelial Cell Scatter Factor Which Binds to Heparin
Eliot M. Rosen, Itzhak D. Goldberg, Barry M. Kacinski, Thomas Buckholz, and David W. Vinter 163

Analysis of Plasma Protein and Lipoprotein Synthesis in Long-Term Primary Cultures of Baboon Hepatocytes Maintained in Serum-Free Medium
Robert E. Lanford, Kenneth D. Carey, Larry E. Estlack, G. Con Smith, and Rick V. Hay 174

Characterization of Vascular Smooth Muscle Cell Phenotype in Long-Term Culture
Marlene Absher, Jan Woodcock-Mitchell, John Mitchell, Linda Baldor, Robert Low, and David Warshaw 183

Maintaining Mosquito Cell Lines at High Temperatures: Effects on the Replication of Flaviviruses
G. Kuno and A. Oliver 193

PLANT CELLULAR AND DEVELOPMENTAL BIOLOGY

Ovule and Suspension Culture of a Cotton Fiber Development Mutant
Barbara A. Triplett, William H. Busch, and Wilton R. Goynes, Jr. 197

Yield and Activity of the *Heliothis Zea* Single Nuclear Polyhedrosis Virus Propagated in Cloned and Uncloned Lines of *Heliothis* Cells
W. C. Rice, A. H. McIntosh, and C. M. Ignoffo 201

RAPID COMMUNICATIONS IN CELL BIOLOGY

Rat Kidney Proximal Tubule Cells in Defined Medium: The Roles of Cholera Toxin, Extracellular Calcium and Serum in Cell Growth and Expression of γ-Glutamyltransferase
Paul B. Hatzinger and James L. Stevens 205

Stainless Steel Mesh Supports High Density Cell Growth and Production of Recombinant Mullerian Inhibiting Substances
James Epstein, Edward J. Desjardins, Peter L. Hudson, and Patricia K. Donahoe 213

Modulation of the Liver Specific Phenotype in the Human Hepatoblastoma Line HEP G2
James H. Kelly and Gretchen J. Darlington 217

No. 3, Part I, March 1989

LETTER TO THE EDITOR

Improved Antenatal Sex Determination of Baboon Amniocytes Using Chang Medium Growth Factor Supplement
John W. Groelke, Judith K. Odom, and Cornelio L. Celaya 223

INVITED REVIEW

Expression of Eucaryotic Genes in Insect Cell Cultures
M. J. Fraser 225

REGULAR PAPERS

Further Purification of a Fibroblast Growth Factor-Like Factor From Chick Embryo Extract by Heparin-Affinity Chromatography
Ichiro Kimura, Yae Gotoh, and Eijiro Ozawa 236

Partial Purification and Characterization of Immunoglobulin Production Stimulating Factor Derived From Namalwa Cells
Koji Yamada, Kazuhiko Akiyoshi, Hiroki Murakami, Takuya Sugahara, Ichiro Ikeda, Kazuhisa Toyoda, and Hirohisa Omura 243

Culture of Human Corpus Cavernosum Endothelium
M. P. Carson, I. Saenz De Tejada, I. Goldstein, and C. C. Haudenschild 248

Genetic Control of Variation in Human Gingival Fibroblast Proliferation Rate
George H. Cockey, Joann A. Boughman, Emily L. Harris, and Thomas M. Hassell 255

Distinction Between Vascular Smooth Muscle Cells and Myoepithelial Cells in Primary Monolayer Cultures of Human Breast Tissue
O. W. Petersen and B. Van Deurs 259

Further Cellular Investigation of the Human Hepatoblastoma-Derived Cell Line HepG2: Morphology and Immunocytochemical Studies of Hepatic-Secreted Proteins
Marie-Élisabeth Bouma, Edith Rogier, Nicole Verthier, Colette Labarre, and Gérard Feldmann 267

Effect of Scavengers of Active Oxygen Species and Pretreatment With Acetyl-Salicylic Acid on the Injury to Cultured Endothelial Cells by Thrombin-Stimulated Platelets
Tor Larsen, Mona Berger Sørensen, Randi Olsen, and Leif Jørgensen 276

Maintenance of Testosterone Production by Purified Adult Rat Leydig Cells for 3 Days In Vitro
Gary R. Klinefelter and Larry L. Ewing 283

Variability in Messenger RNA Levels in Human Umbilical Vein Endothelial Cells of Different Lineage and Time in Culture
David Dichek and Thomas Quertermous 289

PLANT CELLULAR AND DEVELOPMENTAL BIOLOGY

Origin of Plantlets and Callus Obtained From Chile Pepper Anther Cultures
Ilse P. Munyon, John F. Hubstenberger, and Gregory C. Phillips 293

RAPID COMMUNICATIONS IN CELL BIOLOGY

Anti-C-*MYC* DNA Increases Differentiation and Decreases Colony Formation by HL-60 Cells
Erica L. Wickstrom, Thomas A. Bacon, Audrey Gonzalez, Gary H. Lyman, and Eric Wickstrom 297

Errata 297

No. 3, Part II, March 1989

Program Schedule ..... 1 A
Abstracts ..... 11 A
Author Index ..... 70 A
Meeting Summary ..... 74 A

No. 4, April 1989

NOBEL LECTURES IN PHYSIOLOGY OR MEDICINE—1988

Selective Inhibitors of Dihydrofolate Reductase
George H. Hitchings, Jr. 303

Drugs From Emasculated Hormones: The Principle of Syntopic Antagonism
James Black 311

The Purine Path to Chemotherapy
Gertrude B. Elion 321

LETTERS TO THE EDITOR

Heliothis Virescens Cell Growth in Organic Solvents
David W. Altman, Marcel H. Elissalde, Robert D. Stipanovic, and James O. Norman 331

Endothelial Injury Assessed by Isotype Release: ^{3}H-Adenine Compared With ^{51}Cr
J. B. Warren and Una S. Ryan 334

INVITED REVIEW

Role of Different Epithelial Cell Types in Liver Ontogenesis, Regeneration and Neoplasia
Normand Marceau, Marie-Jose Blouin, Lucie Germain, and Micheline Noel 336

REGULAR PAPERS

Human Sweat Duct Cells in Primary Culture. Basic Bioelectric Properties of Cultures Derived From Normals and Patients With Cystic Fibrosis
Peter Steen Pedersen 342

Synthetic Hydrogel Microspheres as Substrata For Cell Adhesion and Growth
K. Shivakumar, R. Renuka Nair, A. Jayakrishnan, B. Chithambara Thanoo, and C. C. Kartha 353

Influence of Branched-Chain Amino Acid Composition of Culture Media on the Synthesis of Plasma Proteins by Serum-Free Cultured Rat Hepatocytes
Angel Montoya, Maria J. Gomez-Lechon, and Jose V. Castell 358

Stimulating Effects of Bovine Small Intestine Mucosal Factors on Rat Hepatocyte Development
Naommy Takahashi, Hirokazu Kumanaka, Hideo Takagi, and Nobuko Mori 365

Culture and Behavior of Osteoblastic Cells Isolated From Normal Trabecular Bone Surfaces
Pierre J. Marie, Abderrahim Lomri, Ayman Sabbagh, and Michel Basle 373

Production of Platelet-Derived Growth Factorlike Protein(s) By a Human Carcinoma Cell Line
Kelly A. O'Donnell, Margaret E. Condon, and Anne W. Hamburger 381

PLANT CELLULAR AND DEVELOPMENTAL BIOLOGY

A Simple, Rapid Protocol For Adventitious Shoot Development From Mature Cotyledons of Glycine Max cv Bragg
Seth Mante, Ralph Scorza, and John Cordts 385

Errata 388

No. 5, May 1989

LETTERS TO THE EDITOR

In the Interest of Clear Communication
Warren I. Schaeffer 389

Milk Plasma Supports Growth and Differentiation of a Mouse Teratocarcinoma Cell Line
Vasanta Subramanian and A. Mubarak Ali 391

EM-Compatible Melamine Substrate Foil for Cell Culture
Christel Westphal, Heide Horler, Siegwald Pentz, and Dieter Frosch 393

Various Cell Lines Grow in Protein-Free Hybridoma Medium
Jan Kovář 395

BRIEF COMMUNICATION

Novel Redistribution of Myosin-Containing Filaments in Cultured Keratinocytes Identified by a Human Monoclonal Autoantibody
Carol L. Williams, Vanda A. Lennon, and Mark R. Pittelkow 397

REGULAR PAPERS

Cultured Human Foreskin Fibroblasts Produce a Factor that Stimulates their Growth with Properties Similar to Basic Fibroblast Growth Factor
Michael T. Story 402

Growth of Epithelium from a Preneoplastic Mammary Outgrowth in Response to Mammary Adipose Tissue
James C. Beck, Howard L. Hosick, and Bruce A. Watkins 409

Comparison of Coulter Volumes with Radiometrically Determined Intracellular Water Volumes for Cultured Cells
Neal S. Burres and Carol E. Cass 419

Modulation of Actin mRNAs in Cultured Vascular Cells by Matrix Components and TGF-β
Olivier Kocher and Joseph A. Madri 424

In Vitro Differentiation of Rabbit Blastocyst Cells
Elizabeth B. Gargus, Douglas H. Robinson, James K. Bubien, Lawrence B. Bugaisky, and Dale J. Benos 435

Elevation of Glutathione Levels and Glutathione S-Transferase Activity in Arsenic-Resistant Chinese Hamster Ovary Cells
T. C. Lee, M. L. Wei, W. J. Chang, I. C. Ho, J. F. Lo, K. Y. Jan, and H. Huang 442

TCA SESSION-IN-DEPTH DEDICATED TO DAME HONOR FELL

Function in Organized Tissue in Culture; Introduction
Joseph Leighton, Convener 449

Honor Bridgett Fell, Ph.D., D.Sc. F.R.S., D.B.E., 1900–1986 The Scientist and Her Contributions
A. Robin Poole 450

The Use of Retinoids as Probes for Analyzing Morphogenesis of Glands from Epithelial Tissues
Margaret H. Hardy 454

Epithelial Cell Interaction in Air-Liquid Interface Culture
Ruy Tchao 460

Reconstitution of the Malignant Phenotype of Genitourinary Cancer in Gradient Culture
Joseph Leighton 466

RAPID COMMUNICATIONS IN CELL BIOLOGY

Clonal Derivation of a Rat Muscle Cell Strain that Forms Contraction-Competent Myotubes
Gary Frederic Merrill 471

An Alternative Method for the Isolation of NS-1 Hybridomas Using Cholesterol Auxotrophy of NS-1 Mouse Myeloma Cells
Yoshinari Myoken, Tetsuji Okamoto, Teruhiko Osaki, Masafumi Yabumoto, Gordon H. Sato, Kazuaki Takada, and J. Denry Sato 477

BOOKS RECEIVED 481

No. 6, June 1989

OBITUARY

Margaret Koudelka Gey 483

LETTER TO THE EDITOR

Establishment of a Murine Malignant Fibrous Histiocytoma Cell Line (DIM-L) with Lung Metastatic Potential
H. Yamamoto and K. Fujishiro 484

EDITORIAL

The Enduring Animal Issue
Larry Horton 486

REGULAR PAPERS

Influence of Extracellular Matrix and Collagen Components on Alveolar Type 2 Cell Morphology and Function
I. Y. R. Adamson, G. M. King, and L. Young 494

A New Human Cholangiocellular Carcinoma Cell Line (HuCC-T1) Producing Carbohydrate Antigen 19/9 in Serum-Free Medium
Miki Miyagiwa, Takafumi Ichida, Takayoshi Tokiwa, Jiro Sato, and Hiroshi Sasaki 503

Human Arterial Smooth Muscle Cells in Culture: Inverse Relationship Between Proliferation and Expression of Contractile Proteins
Gunnar Fager, Göran K. Hansson, Allen M. Gown, David M. Larson, Omar Skalli, and Göran Bondjers 511

Serum Glucocorticoids Have Persistent and Controlling Effects on Insulinlike Growth Factor I Action Under Serum-Free Assay Conditions in Cultured Human Fibroblasts
Cheryl A. Conover, Ron G. Rosenfeld, and Raymond L. Hintz 521

Autocrine-Paracrine Inhibition of Growth Hormone and Prolactin Production by GH$_3$ Cell-Conditioned Medium
C. A. Lapp, J. M. Tyler, Y. S. Lee, and M. E. Stachura 528

Clonal Populations of the Mouse Mammary Cell Line, COMMA-D, Which Retain Capability of Morphogenesis In Vivo
Keith G. Danielson, Janice E. Knepper, Frances S. Kittrell, Janet S. Butel, Daniel Medina, and Elisa M. Durban 535

Growth and Characterization of Epithelial Cells from Normal Human Uterine Ectocervix and Endocervix
M. E. Turyk, T. R. Golub, N. B. Wood, J. L. Hawkins, and G. D. Wilbanks 544

Detection of Glucocorticoid Sensitive Secretory Proteins from Human Melanoma Cells
Dennis M. DiSorbo 557

Observation of Production of Immunoactive Prolactin by Normal Human Connective Tissue in Cell Culture
Jane Chapitis, Lorraine M. Betz, John R. Brumsted, Mark Gibson, Sally T. Kuslis, Helen George-McDaniel, and Daniel H. Riddick 564

PLANT CELLULAR AND DEVELOPMENTAL BIOLOGY

Protoplast Regeneration and Organogenesis from Pea Protoplasts
Renate Lehminger-Mertens and Hans-Jörg Jacobsen 571

Maturation, Germination, and Conversion of Norway Spruce (*Picea Abies* L.) Somatic Embryos to Plants
Michael R. Becwar, Thomas L. Noland, and Judith L. Wyckoff 575

RAPID COMMUNICATIONS IN CELL BIOLOGY

The Androgen-Dependent Rat Prostate Protein, Probasin, is a Heparin-Binding Protein that Co-Purifies with Heparin-Binding Growth Factor-1
Yuhsi Matuo, Pamela S. Adams, Nozomu Nishi, Hidetaro Yasumitsu, John W. Crabb, Robert J. Matusik, and Wallace L. McKeehan 581

No. 7, July 1989

REGULAR PAPERS

Influence of L-Thyroxine, L-Triiodothyronine, Thyroid Stimulating Hormone, or Estradiol on the Cell Kinetics of Cultured Mammary Cancer Cells
Yvan de Launoit and Robert Kiss 585

Retention of Differentiated Characteristics in Human Fetal Keratinocytes In Vitro
Anne R. Haake and Alfred T. Lane 592

Serum-Free, Chemically Defined Medium to Evaluate the Direct Effects of Growth Factors and Inhibitors on Proliferation and Function of Neonatal Rat Cardiac Muscle Cells in Culture
Takahiko Suzuki, Miyuki Ohta, and Hiroyoshi Hoshi 601

Longitudinal Growth of Skeletal Myotubes In Vitro in a New Horizontal Mechanical Cell Stimulator
Herman H. Vandenburgh and Patricia Karlisch 607

Ascorbic Acid Facilitates Chicken Myoblast Fusion In Vitro
R. G. MacBride 617

Characterization of a New Spontaneously Developed Murine Mammary Adenocarcinoma in Syngeneic BALB/c Hosts
Tsu-Yi Chao and T. Ming Chu 621

Radioactive Labeling of Proteins in Cultured Postimplantation Mouse Embryos I. Influence of the Embryo Preparation Method
Jean Nowak and Joachim Klose 627

Radioactive Labeling of Proteins in Cultured Postimplantation Mouse Embryos II. Dose and Time Dependency
Jean Nowak and Joachim Klose 634

Influence of Human Breast Development on the Growth Properties of Primary Cultures
Jose Russo, Megan J. Mills, Michelline J. Moussalli, and Irma H. Russo 643

Transferrin is an Autocrine Growth Factor Secreted by Reuber H-35 Cells in Serum-Free Culture
Lawrence E. Shapiro and Neil Wagner 650

Mycoplasma Provides for the Spreading of Opossum Kidney Cells in a Serum-Free, Defined Medium
Lisa J. Leiderman and Vincent W. Dennis 655

Expression of the Human Chondrocyte Phenotype In Vitro
Amy Lynn Aulthouse, Michael Beck, Edward Griffey, Julie Sanford, Karen Arden, Mirta A. Machado, and William A. Horton 659

PLANT CELLULAR AND DEVELOPMENTAL BIOLOGY

Plant Regeneration from Seedling Explants and Cotyledon Protoplasts of *Glycine Argyrea* Tind.
N. Hammatt, B. Jones, and M. R. Davey 669

BOOK REVIEW 672

No. 8, August 1989

LETTER TO THE EDITOR

Cytotoxic Activity of Disulfur Decafluoride (S_2F_{10}), A Decomposition Product of Electrically-Stressed SF_6
G. D. Griffin, K. Kurka, M. G. Nolan, M. D. Morris, I. Sauers, and P. C. Votaw 673

INVITED REVIEW

Macromolecular Affinity Labeling
Tae H. Ji and Inhae Ji 676

REGULAR PAPERS

Rat Pancreatic Interlobular Duct Epithelium: Isolation and Culture in Collagen Gel
Sherwood Githens, Jane A. Schexnayder, Kamlesh Desai, and Christina L. Patke 679

Differentiation of Cultured Human Keratinocytes: Effect of Culture Conditions on Lipid Composition of Normal vs. Malignant Cells
Maria Ponec, Arij Weerheim, Johanna Kempenaar, Peter M. Elias, and Mary L. Williams 689

Maintenance of Dihydrofolate Reductase Enzyme After Disappearance of DHFR mRNA During Muscle Cell Differentiation
Edward E. Schmidt and Gary F. Merrill 697

Effects of Transforming Growth Factor β on Growth of Human Mammary Epithelial Cells in Culture
Midori Hosobuchi and Martha R. Stampfer 705

Characterization of Primary Cell Cultures Derived from Rat Renal Proximal Tubules
Tai C. Chen, Norman P. Curthoys, Carl F. Lagenaur, and Jules B. Puschett 714

Establishment of Five Human Myeloma Cell Lines
Masayoshi Namba, Takemi Ohtsuki, Masaharu Mori, Atsushi Togawa, Hideho Wada, Takashi Sugihara, Yoshihito Yawata, and Tetsuo Kimoto 723

Culture of Human Neoplastic Gastrointestinal Smooth Muscle Cells
Daryl F. Sas, Judy K. Lundy, and Laurence J. Miller 730

Mechanism of Action of the Migration Stimulating Factor Produced by Fetal and Cancer Patient Fibroblasts: Effect on Hyaluronic Acid Synthesis
S. L. Schor, A. M. Schor, A. M. Grey, J. Chen, G. Rushton, M. E. Grant, and I. Ellis 737

Differentiation of Rabbit Adipocyte Precursor Cells in a Serum-Free Medium
Yves Reyne, Jean Nouguès, and Jean-Paul Dulor 747

PLANT CELLULAR AND DEVELOPMENTAL BIOLOGY

Induction and Growth of Callus from Immature Influorescences of "Zebra" Bermudagrass as Affected by Casein Hydrolysate and 2,4-D Concentration
Ivan Rodrigo Artunduaga, C. M. Taliaferro, and Becky B. Johnson 753

Embryo Development from Discrete Cell Aggregates in *Ipomoea Batatas* (L.) Lam. in Response to Structural Polarity
Raymond P. Chée and Daniel J. Cantliffe 757

BOOK REVIEW 761

No. 9, September 1989

INVITED REVIEW

Culture of Pancreatic Islet Cells and Islet Hormone Producing Cell Lines "Morphological and Functional Integrity in Culture"
Ryosaburo Takaki 763

REGULAR PAPERS

Primary Rabbit Kidney Proximal Tubule Cell Cultures Maintain Differentiated Functions When Cultured in a Hormonally Defined Serum-Free Medium
Mary L. Taub, Il Suk Yang, and Yue Wang 770

Primary Cultures of Rabbit Renal Proximal Tubule Cells: I. Growth and Biochemical Characteristics
Michael D. Aleo, Mary L. Taub, Peter A. Nickerson, and Paul J. Kostyniak 776

Cadmium Nephrotoxicity in Human Proximal Tubule Cell Cultures
Debra J. Hazen-Martin, Donald A. Sens, John G. Blackburn, and Mary Ann Sens. 784

An Electrophysiological and Freeze Fracture Assessment of Cadmium Nephrotoxicity In Vitro
Debra J. Hazen-Martin, Donald A. Sens, John G. Blackburn, Mary C. Flath, and Mary Ann Sens . 791

The Application of Renal Cells in Culture in Studying Drug-Induced Nephrotoxicity
Patricia D. Williams 800

Influence of Cell Culture Conditions on Aromatase Activity in Human Genital Skin Fibroblasts
Tarek Bisat, Terry R. Brown, Claude J. Migeon, and Gary D. Berkovitz 806

Isolation of Melanized Cell Lines with Stable Phenotypes from a Goldfish Erythrophoroma Cell Line and Cryopreservation of These Cells by the Use of Autologous Serum
Shui-Chou Chou, John D. Taylor, and T. T. Tchen. 813

Responses of Type II Pneumocyte Antioxidant Enzymes to Normoxic and Hyperoxic Culture
Peter C. Panus, Sadis Matalon, and Bruce A. Freeman 821

Calcium Regulation of Skeletal Myogenesis. I. Cell Content Critical to Myotube Formation
Ronald J. Przybylski, Robert G. MacBride, and Albert C. Kirby 830

Improved Maintenance of Adult Rat Hepatocytes in a New Serum-Free Medium in the Presence or Absence of Barbiturates
Masahiro Miyazaki, Yasunori Suzuki, Munehiro Oda, Akira Kawai, Liyan Bai, and Jiro Sato 839

Multiple Interactions in Juxtaposed Monolayers of Amphibian Neuronal, Epidermal, and Mesodermal Limb Blastema Cells
Michael J. Smith and Morton Globus 849

Cultivation of the Exoerythrocytic Stage of *Plasmodium Berghei* in Primary Cultures of Mouse Hepatocytes and Continuous Mouse Cell Lines
Gary W. Long, Simon Leath, Richard Schuman, Michael R. Hollingdale, W. Ripley Ballou, Betty Kim Lee Sim, and Stephen L. Hoffman 857

BOOK REVIEW 862

No. 10, October 1989

LETTER TO THE EDITOR

Microvascular Endothelial Cell Cultures from Human Omental Adipose Tissue
Ann Knedler, Robert H. Eckel, Philip A. Kern, and Richard G. Ham 863

Caution About Assay of Alkaline Phosphatase to Quantitate Cell Numbers
Walter Bodmer 865

INVITED REVIEW

Growth Inhibitors: Molecular Diversity and Roles in Cell Proliferation
Kaoru Miyazaki and Takekazu Horio 866

REGULAR PAPERS

Basic Fibroblast Growth Factor, Albumin, and Transferrin Purified from Rat Rhodamine Fibrosarcoma Tissue are all Essential for Growth of Primary Tumor Cells from the Same Tissue in Serum-Free Medium
Yosinobu Nagao and Katsuzo Nishikawa. 873

Characterization of Proliferation and Differentiation of Opossum Kidney Cells in a Serum-Free Defined Medium
Lisa J. Leiderman, J. Allan Tucker, and Vincent W. Dennis 881

Resistance to the *Bacillus Sphaericus* Toxin in Cultured Mosquito Cells
Jamie M. Schroeder, Constance Chamberlain, and Elizabeth W. Davidson 887

Characterization of a Continuous Smooth Muscle Cell Line Derived from Rabbit Aorta
Maurice Nachtigal, Madan L. Nagpal, Phillip Greenspan, Sidonia A. Nachtigal, and Alain Legrand 892

Comparative Properties of Untreated and *N*-Nitrosobenzylmethylamine-Transformed Rat Esophageal Epithelial Cell Lines
Gary D. Stoner, Merrill S. Babcock, Maureen M. McCorquodale, William T. Gunning III, Roubadeh Jamasbi, Neilma Budd, and Bharati Hukku 899

Nutritional Requirements of Papillomavirus-Transformed Mouse Cells and an Uninfected Parent Line in Serum-Free Culture
Teresa P. DiLorenzo, Joseph A. DeMaro, and Dorothy E. Pumo. 909

Microporosity of the Substratum Regulates Differentiation of MDCK Cells In Vitro
Jeffery R. Cook, Barbara E. Crute, Laura M. Patrone, Joseph Gabriels, Maureen E. Lane, and Robert G. Van Buskirk. 914

Direct Effects of Serotonin and Ketanserin on the Functional Morphology of Embryonic Chick Skin In Vitro
Hilde Beele, Hubert Thierens, and Leo de Ridder 923

Production of Monoclonal Antibodies Against Avian LHRH-I
Brenda Alston-Mills, Qi Chang Li, and Mary Ann Ottinger 934

Isolation of Fetal Mouse Motor Neurons on Discontinuous Percoll Density Gradients
Michael J. Strong and Ralph M. Garruto 939

Use of a Laser Diffraction Particle Sizer for the Measurement of Mean Diameter of Multicellular Tumor Spheroids
C. D. Boothby, Jill Daniel, Sandra Adam, and J. E. D. Dyson. 946

β-Adrenergic Responsiveness in a Human Submandibular Tumor Cell Line (A253)
Yitzhak Marmary, Xinjun He, Arthur R. Hand, Jonathan A. Ship, and Robert B. Wellner. 951

A Simple, Disposable, and Improved Organ Culture System for Maintaining Three-Dimensional Development of Mouse Embryonic Molars
Yasunori Sakakura, Naoki Fujiwara, and Tokio Nawa 959

RAPID COMMUNICATIONS IN CELL BIOLOGY

Stimulation by Transforming Growth Factor-β of Epidermal Growth Factor-Dependent Growth of Aged Human Fibroblasts: Recovery of High Affinity EGF Receptors and Growth Stimulation by EGF
Tomoyuki Kawamoto, Mieko Nishi, Kojiro Takahashi, Toshio Nishiyama, J. Denry Sato, and Shigehiko Taniguchi 965

The Ornithine Aminotransferase Gene in Gyrate Atrophy of the Retina: Analysis of Expression and Gross Structure of this Gene in Cultured Fibroblasts
James D. Shull and Henry C. Pitot 971

No. 11, November 1989

EDITORIAL

Developments in Plant Cell Culture Highlight Orlando Meeting
Indra K. Vasil and The Editors 977

LETTER TO THE EDITOR

Progesterone Production and Release in Cultured Placental Tissue From Diabetic and Normal Rats Fed High Calcium
Susan M. Reiziss, Brenda Alston-Mills, and Larry Douglass 978

REGULAR PAPERS

Locomotory Behavior of Fibroblasts in "Sail-Sheets"
Satish C. Tripathi 980

Fish Cell Line (ULF-23HU) Derived From the Fin of the Central Mudminnow (*Umbra limi*): Suitable Characteristics for Clastogenicity Assay
Eun-Ho Park, Jae-Seong Lee, Ae-Kyung Yi, and Hisami Etoh 987

Effects of Different Concentrations of Serum on Cartilage Growth in an Organ Culture System
R. Shurtz-Swirski, D. Lewinson, P. Shenzer, and M. Silbermann 995

Human Epidermis Reconstructed In Vitro: A Model to Study Keratinocyte Differentiation and Its Modulation by Retinoic Acid
Marcelle Regnier and Michel Darmon 1000

Effect of Retinoids on Growth Factor-Induced Anchorage Independent Growth of Human Fibroblasts
Helen J. Palmer, Veronica M. Maher, and J. Justin McCormick 1009

Development and Characterization of Primary Cultures of Smooth Muscle Cells From the Fibromuscular Stroma of the Guinea Pig Prostate
Carmela Ricciardelli, David J. Horsfall, John M. Skinner, Douglas W. Henderson, Villis R. Marshall, and Wayne D. Tilley 1016

Limited Cell Attachment Time as a Method to Synchronize Cells Grown in Monolayer Culture
Paul G. Held, James W. Doyle, Christian Sell, and Kilambi Janakidevi 1025

In Vitro Toxicity of Solubilized 2,3,4-Trimethylpentane I. Cytotoxicity and Metabolism of TMP Using Primary Hepatocytes
N. J. Delraso, D. R. Mattie, and C. S. Godin 1031

Contraction of Collagen by Human Fibroblasts and Keratinocytes
Jan E. M. Souren, Maria Ponec, and Roeland van Wijk 1039

Variable Responsiveness of Rat Tracheal Epithelial Cells to Bovine Serum Albumin in Serum-Free Culture
David. G. Thomassen 1046

Isolation of Alveolar Epithelial Cells From Lung Tissue Obtained at Autopsy
Donald L. Shapiro, Jacob N. Finkelstein, and Thor Van Diver 1051

5′-Nucleotidase Activity in Cultured Cell Lines. Effect of Different Assay Conditions and Correlation with Cell Proliferation
Javier Turnay, Nieves Olmo, Gunnilla Risse, Klaus von der Mark, and Maria A. Lizarbe 1055

Initiation and Ultrastructure of a Reptilian Fibroblast Cell Line Obtained from Cutaneous Fibropapillomas of the Green Turtle, *Chelonia Mydas*
Joanne L. Mansell, Elliott R. Jacobson, and Jack M. Gaskin 1062

Optimization of Culture Conditions for Human Corneal Endothelial Cells
Katrin Engelmann and Peter Friedl 1065

PLANT CELLULAR AND DEVELOPMENTAL BIOLOGY

Induction of Microspore Embryogenesis in *Brassica Napus* L. by Gamma Irradiation and Ethanol Stress
P. M. Pechan and W. A. Keller 1073

Loss of Soybean Trypsin Inhibitor in Callus as Monitored by Inhibition Enzyme Immunoassay
D. M. Wrigley, M. B. Lindsay, and R. J. Lebowitz 1075

No. 12, December 1989

INVITED REVIEW

Protein Factors Which Regulate Cell Motility
Eliot M. Rosen and Itzhak D. Goldberg 1079

REGULAR PAPERS

Viability of Meiotic Prophase Spermatocytes of Rats is Facilitated in Primary Culture of Dispersed Testicular Cells on Collagen Gel by Supplementing Epinephrine or Norepinephrine: Evidence that Meiotic Prophase Spermatocytes Complete Meiotic Divisions In Vitro
Yosinobu Nagao 1088

Bovine Sesamoid Bones: A Culture System for Anatomically Intact Articular Cartilage
G. H. V. Korver, R. J. van de Stadt, G. P. J. van Kampen, E. Kiljan, and J. K. van der Korst 1099

Growth Factor Interactions Between Mouse Mammary Cell Lines Cocultured in Collagen Gels
Steve Hamner, Walis Jones, Jean R. Starkey, and Howard L. Hosick 1107

Culture and Characterization of Fetal Human Atrial and Ventricular Cardiac Muscle Cells
William C. Claycomb, Joseph B. Delcarpio, Sally E. Guice, and R. L. Moses 1114

Organic and Inorganic Lead Inhibit Neurite Growth in Vertebrate and Invertebrate Neurons in Culture
Gerald Audesirk, David Shugarts, Gina Nelson, and Julie Przekwas 1121

Biogenesis of Plasma Lipoproteins in Rat Hepatoma McA-RH7777: Importance of Diffusion-Mediated Events During Cell Growth
Steven Tanabe, Helayne Sherman, Lynn Smith, Lee-Ann Yang, Richard Fleming, and Rick Hay 1129

A Practical Method for Rescuing Desired Hybridomas During Monoclonal Antibody Production
Grazyna Adamus, Z. Suzanne Zam, Scott S. Emerson, and Paul A. Hargrave 1141

A Mouse Hybrid Cell Line That Supports Gene Expression From a Variety of Promoters in Amplifiable Vectors
T. Venkat Gopal, Tom Polte, Patrick Arthur, and Michael Seidman 1147

PLANT CELLULAR AND DEVELOPMENTAL BIOLOGY

The *In Ovulo* Environment and Its Relevance to Cloning Wheat Via Somatic Embryogenesis
John G. Carman 1155

Stress Induced Somatic Embryogenesis in Carrot and Its Application to Synthetic Seed Production
Hiroshi Kamada, Katsunori Kobayashi, Tomohiro Kiyosue, and Hiroshi Harada 1163

Production of Synthetic Seed by Desiccation and Encapsulation
Jules Janick, Sherry L. Kitto, and Yong-Hwan Kim 1167

Effects of Dehydration and Exogenous Growth Regulators on Dormancy, Quiescence and Germination of Grape Somatic Embryos
D. J. Gray 1173

Maturation and Greenhouse Planting of Alfalfa Artificial Seeds
JoAnn A. Fujii, David Slade, and Keith Redenbaugh 1179

Application of Artificial Seed Technology in the Production of Hybrid Alfalfa (*Medicago Sativa* L.)
B. D. McKersie, T. Senaratna, S. R. Bowley, D. C. W. Brown, J. E. Krochko, and J. D. Bewley 1183

RAPID COMMUNICATIONS IN CELL BIOLOGY

Immuno-Isolation and Culture of Biliary Epithelial Cells From Normal Human Liver
R. Joplin, A. J. Strain, and J. M. Neuberger 1189

Expression and Developmental Regulation of the k-FGF Oncogene in Human and Murine Embryonal Carcinoma Cells
Jay Tiesman and Angie Rizzino 1193

Covalent Binding of 17β-Estradiol and Retinoic Acid to Proteins in the Human Breast Cancer Cell Line MCF-7
Noriko Takahashi and Theodore R. Breitman 1199

AUTHOR INDEX 1201

SUBJECT INDEX 1204

SPECIAL REVIEWERS 1207